



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Solution by G. B. M. ZERR, A.M., Ph. D., Professor of Chemistry and Physics, The Temple College, Philadelphia, Pa.

Let $a=20^\circ$ =altitude, $a'=31^\circ$ =altitude, φ =latitude, $\delta=15^\circ$ =declination, $\theta=15^\circ$ =sun's angular path for one hour, h =hour angle.

$$\therefore \cos h = \frac{\sin a - \sin \varphi \sin \delta}{\cos \varphi \cos \delta}, \cos[h - \theta] = \frac{\sin a' - \sin \varphi \sin \delta}{\cos \varphi \cos \delta}.$$

Eliminating h , we get

$$[\sin a - \sin \varphi \sin \delta] \cos \theta + \{\cos^2 \varphi \cos^2 \delta - [\sin a - \sin \varphi \sin \delta]^2\}^{\frac{1}{2}} \sin \theta = \sin a' - \sin \varphi \sin \delta.$$

$$\begin{aligned} \text{But } \theta = \delta. \quad \therefore \sin^2 \varphi \sin^2 \delta [2 + \cos \delta] - 2 \sin \varphi \sin \delta [1 - \cos \delta] [\sin a + \sin a'] \\ = \cos^2 \delta \sin^2 \delta + 2 \sin a \sin a' \cos \delta - \sin^2 a - \sin^2 a'. \end{aligned}$$

$$\therefore .067055 \sin^2 \varphi - .015126 \sin \varphi = .020553; \sin^2 \varphi - .2256 \sin \varphi = .3065.$$

$$\sin \varphi = .6778 \text{ or } -.4522; \varphi = 42^\circ 40' 30''.$$

115. Proposed by F. P. MATZ, Sc. D., Ph. D., Professor of Mathematics and Astronomy in Defiance College Defiance, Ohio.

Determine geometrically where to stand so as to be able to throw a stone over a tree with the minimum velocity.

Solution by G. B. M. ZERR, A.M., Ph.D., Professor of Chemistry and Physics, The Temple College, Philadelphia, Pa.

The velocity of projection is the same as a body would acquire in falling from the directrix of the parabolic path to the point of projection.

\therefore The velocity will be a minimum when the directrix is the least distance above the top of the tree. This is the case when you stand at the base of the tree, then the directrix passes just above the tree.

PROBLEMS FOR SOLUTION.

ARITHMETIC.

164. Proposed by JOSEPH V. COLLINS, Ph. D., Professor of Mathematics, State Normal School, Stevens Point, Wis.

Three women, the first with ten eggs, the second with thirty, and the third with fifty, went to market. They each got the same for their eggs, and all returned with the same money. What did they get?